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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,986	03/16/2001	Ross Callon	1014-002US01	7449
28863	7590	11/22/2005	EXAMINER	
SHUMAKER & SIEFFERT, P. A. 8425 SEASONS PARKWAY SUITE 105 ST. PAUL, MN 55125			PHAN, TRI H	
			ART UNIT	PAPER NUMBER
			2661	

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/810,986	<b>Applicant(s)</b> CALLON, ROSS	
	<b>Examiner</b> Tri H. Phan	<b>Art Unit</b> 2661	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,4-18,20-24 and 26-44 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,19 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 18,20-24,26-41 and 44 is/are allowed.
- 6) ☐ Claim(s) 1,4-5,7-12,15-17, and 42 is/are rejected.
- 7) ☐ Claim(s) 6,13-34 and 43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment/Arguments*

1. This Office Action is in response to the Response/Amendment filed on July 27<sup>th</sup>, 2005. Claims 2-3, 19, and 25 are now canceled. Claims 1, 4-18, 20-24, and 26-44 are now pending in the application.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 5, and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by **Cain, Bradley** (U.S.6,697,325; hereinafter refer as '**Cain**').

- In regard to claim 1, **Cain** discloses in Figs. 1-3 and in the respective portions of the specification about the method and system for expediting reconvergence in the communication network, which comprise *method for generating link failure information identifying the failed link* ('link fail'; For example see Fig.1; col. 4, lines 37-39; col. 4, line 64 through col. 5, line 20) *within the computer network* ('communication network') *and communicating the update message*

('LSA message'; For example see col. 1, lines 28-33) *to routers within the computer network in accordance with the routing protocol* ('link state routing protocol'; For example see col. 1, lines 20-27), *wherein the update message specifies one or more routes through the computer network that rely upon the failed link* (For example see col. 2, lines 34-36) *and requests withdrawal of the specified routes* (For example see Fig. 1; col. 3, lines 50-57; col. 5, lines 21-25; wherein the identifying failed communication link between two nodes in the LSA protocol message is the "specified route" between two nodes to be removed or "to be withdrawn") *and wherein the update message further incorporates the link failure information to identify the failed link* (For example see col. 1, line 66 through col. 2, line 52; col. 4, line 64 through col. 5, line 9).

- Regarding claim 5, in addition to features in base claim 1 (see rationales pertaining the rejection of base claim 1 discussed above), **Cain** further discloses *wherein generating link failure information includes generating data defining a time period* ('predetermined period of time') *for storing the link failure information, the method further comprising automatically deleting the link failure information upon expiration of the time period* (wherein the particular communication link failure is deleted from the cache after a predetermined period of time generated by the system; For example see col. 4, lines 37-39).

- In regard to claim 9, in addition to features in base claim 1 (see rationales pertaining the rejection of base claim 1 discussed above), **Cain** further discloses about the method for *detecting the failure of the link within the computer network* (For example see col. 4, line 64 through col. 5, line 16).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 7-8, 10-12, 15, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cain, Bradley** (U.S.6,697,325; hereinafter refer as '**Cain**') in view of **Agarwal et al.** (U.S.6,760,777; hereinafter refer as '**Agarwal**').

- In regard to claims 4, and 7-8, **Cain** discloses all the subject matter of the claimed invention as discussed in part 3 above in this office action, including the use of various routing protocols to route the LSA protocol messages ("*update message*"; see col. 1, lines 13-19, 28-30; wherein the identifying failed communication link between two nodes in the LSA protocol message is the "*specified route*" between two nodes to be removed or "*to be withdrawn*" as disclosed in col. 4, lines 37-39; col. 4, line 64 through col. 5, line 6; col. 5, lines 21-25), but fails to explicitly disclose about the *Border Gateway Protocol 'BGP'*. However, such implementation is known in the art.

For example, **Agarwal** discloses in Figs. 1-5 and in the respective portions of the specification about the system and method for distributing the path-vector routing protocol ("*path vector routing algorithm*") such as router-distributed Border Gateway Protocol 'rdBGP'

(“*routing data with BGP*”) for establishing routing sessions within multiprocessor router and external protocol peers, calculating set of routes including best route, sharing or exchanging route information with external protocol peers 'eBGP', and updating route information from other instances of received rdBGP information (“*generating update message*”) to establish redundant communication sessions with external protocol peers and providing fault tolerance (For example see Figs. 3-5; Abstract; col. 1, lines 30-56; col. 2, lines 46-65). **Agarwal** further discloses about the rdBGP update and procedure for explicit route withdrawal based on route path attributes (“For example see col. 7, lines 1-10).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the use of **Cain**'s routing protocol message into the distributing the path-vector routing protocol such as router-distributed Border Gateway Protocol 'rdBGP' as taught by **Agarwal**, with the motivation being to provide fault tolerance by establishing redundant communication sessions with external protocol peers as disclosed in **Agarwal**: col. 3, lines 45-48.

- Regarding claims 10-11, **Cain** discloses in Figs. 1-3 and in the respective portions of the specification about the method and computer readable medium (For example see Fig. 3; col. 6, lines 26-65) for expediting reconvergence in the communication network, which comprise the *method for receiving link failure information identifying the failed link* ('communication link failure in the LSA protocol message'; For example see col. 2, lines 34-40; col. 5, line 21-48), *receiving packet identifying the destination within the computer network* (wherein it is obvious that the source and destination addresses in the packet's header are well known in the art in order

Art Unit: 2661

to send/receive the packet to/from, for example, IP packet with source and destination address), *storing the link failure information* (For example see col. 4, lines 11-18) *and forwarding the link failure information* (For example see col. 4, lines 64-67) *within the computer network*. **Cain** fails to explicitly disclose about the “*path vector routing protocol*”. However, such implementation is known in the art.

For example, **Agarwal** discloses in Figs. 1-5 and in the respective portions of the specification about the system and method for distributing the path-vector routing protocol (“*path vector routing algorithm*”) such as router-distributed Border Gateway Protocol 'rdBGP' (“*routing data with BGP*”) for establishing routing sessions within multiprocessor router and external protocol peers, calculating set of routes including best route, sharing or exchanging route information with external protocol peers 'eBGP', and updating route information from other instances of received rdBGP information (“*generating update message*”) to establish redundant communication sessions with external protocol peers and providing fault tolerance (For example see Figs. 3-5; Abstract; col. 1, lines 30-56; col. 2, lines 46-65). **Agarwal** further discloses about the rdBGP update and procedure for explicit route withdrawal based on route path attributes (“For example see col. 7, lines 1-10).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to implement the use of **Cain**'s routing protocol message into the distributing the path-vector routing protocol such as router-distributed Border Gateway Protocol 'rdBGP' as taught by **Agarwal**, with the motivation being to provide fault tolerance by establishing redundant communication sessions with external protocol peers as disclosed in **Agarwal**: col. 3, lines 45-48.

- In regard to claim 12, in addition to features in base claim 10 (see rationales pertaining the rejection of base claim 10 discussed above), **Cain** further discloses about the *method for selecting the route based on the routing table, wherein the route defines the path to the destination* ('topology database'; For example see col. 4, lines 49-67; wherein the identified communication link between two nodes in the LSA protocol message is the "*selecting route defines the path to the destination*" as disclosed in Fig. 1; col. 4, line 64 through col. 5, line 6) and *discarding the route when the path uses the failed link* (For example see col. 5, lines 21-25).

**Agarwal** also discloses about the routers forwarding data packets between sub networks based on routing table ("*routing table*"; For example see col. 1, lines 15-56) and about the rdBGP update and procedure for explicit route withdrawal based on route path attributes ("*discarding route based on failed link path*"; For example see col. 7, lines 1-10).

- Regarding claim 15, in addition to features in base claim 10 (see rationales pertaining the rejection of base claim 10 discussed above), **Cain** further discloses about *storing the link failure information for a storage time period* ('predetermined period of time'; For example see col. 2, lines 22-25; col. 4, lines 37-39) and *selectively forwarding additionally received copies of the link failure information based on the expiration of the storage time period* (For example see col. 2, lines 25-31, 41-43).

- In regard to claim 42, **Cain** discloses in Figs. 1-3 and in the respective portions of the specification about the method and system for expediting reconvergence in the communication



Art Unit: 2661

network, which comprise *receiving the message* ('LSA protocol message'; step 204 in Fig. 2) *including link failure information identifying the failed link within the computer network* ('link fail'; For example see col. 2, lines 34-40; col. 5, line 21-48), *wherein the message includes an origin identifier that identifies an originating network device* ('supporting node'; wherein it is obvious that the source address of the supporting node and destination addresses of the node, which receives the LSA protocol message, in the packet's header are well known in the art in order to send/receive the packet to/from, for example, IP packet with source and destination address) *that detected the link failure and a timestamp* ('time' in the link status information from the LSA protocol message) *indicating when the failed link was detected* (For example see col. 1, lines 48-58); *accessing a data store* ('topology database'; see col. 4, lines 49-63) *to determine whether link failure information identifying the failed link, the originating network device and the timestamp has previously been received* (steps 206 and 208 in Fig. 2); *and forwarding the message only when the link failure information has not been previously received* (For example see col. 4, lines 64-67; wherein, if the link status information is not related to the previous communication link failure as disclosed in steps 206 and 208 in Fig. 2; the node provides the link status information to other nodes in order to reduce the number of times for computing new routes as disclosed in col. 2, lines 16-19).

6. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cain, Bradley** (U.S.6,697,325; hereinafter refer as '**Cain**') in view of **Agarwal et al.** (U.S.6,760,777; hereinafter refer as '**Agarwal**'), further in view of **Hardjono** (U.S.6,425,004; hereinafter refer as '**Hardjono**').

- Regarding claims 16-17, the combination of **Agarwal** and **Cain**'s system discloses all the subject matter of the claimed invention as discussed in part 4 and 5 of this Office action above, about the method and system for expediting reconvergence in the communication network (**Cain**) and for distributing the path-vector routing protocol in establishing routing sessions within multiprocessor router and external protocol peers (**Agarwal**), but fails to explicitly disclose the “*verifying and authenticating information originated from neighboring router*” the link failure information. However, such implementation is known in the art.

For example, **Hardjono** discloses in Figs. 1-10 and in the respective portions of the specification about the detecting and locating the misbehaving device in the network domain, through the use of the two-level authentication scheme to allow the receiving device to authenticate the originating sector for the packet and to secure the trusted authority between sectors (“*verifying and authenticating information originated from neighboring router*”; For example see Figs. 1, 7-10; col. 1, lines 48-63; col. 5, lines 40-60; col. 5, line 61 through col. 6, line 18).

Thus it would have been obvious to the person of ordinary skill in the art at the time of the invention was made to combine the invention as taught by **Hardjono**, by implement the method for authenticating the originating sector for the packet and securing the trusted authority between sectors into the combination of **Agarwal** and **Cain**'s system, with the motivation being to provide the secure and trusted authority between sectors, in which the misbehaving communication device is operated as disclosed in **Hardjono**: col. 2, lines 1-3.

***Response to Amendment/Arguments***

7. Applicant's arguments filed on July 27<sup>th</sup>, 2005 have been fully considered but they are not persuasive.

- In regard to claims 1, 5 and 9, Applicant asserts that **Cain** does not disclose “*a protocol in which an update message specifies routes to be withdraw and link failure information that identifies a fail link*” as disclosed in claim 1. Examiner respectfully disagrees. **Cain** does disclose about the link state routing protocol (“*a routing protocol*”), which uses the link state advertisement ‘LSA’ protocol messages (“*update message*”; see col. 1, lines 45-52), when detecting a communication link fails, for sending to other nodes the identifying failed communication link (“*link failure information that identifies the failed link*”; see col. 2, lines 34-36) and removing the failed communication link from the lists of communication links (“*specified routes to be withdrawn*”; see col. 2, lines 36-41; wherein the identifying failed communication link between two nodes is the “*specified route*” between two nodes to be removed or “*to be withdrawn*”). **Cain** also discloses about deleting the particular communication link failure from the cache after a predetermined period of time (“*generating data defining a time period for storing the link failure information ... automatically deleting the link failure information upon expiration of the time period*” as disclosed in claim 5; see col. 4, lines 37-39; wherein the predetermined period of time is generated by the system). Therefore, Examiner concludes that **Cain** teaches the arguable features, as disclosed here and in part 3 above of this Office action.

- Regarding claims 4, 7-8, and 10-11, Applicant asserts that the combination of **Cain** and **Agarwal** does not disclose the use of *“BGP or any path vector protocol in which an update message specifies routes to be withdraw and link failure information that identifies a fail link”*. Examiner respectfully disagrees. **Cain** does disclose about the link state routing protocol (*“a routing protocol”*), which uses the link state advertisement ‘LSA’ protocol messages (*“update message”*; see col. 1, lines 45-52), when detecting a communication link fails, for sending to other nodes the identifying failed communication link (*“link failure information that identifies the failed link”*; see col. 2, lines 34-36) and removing the failed communication link from the lists of communication links (*“specified routes to be withdrawn”*; see col. 2, lines 36-41; wherein the identifying failed communication link between two nodes is the *“specified route”* between two nodes to be removed or *“to be withdrawn”*); but lacks about the *“Border Gateway Protocol ‘BGP’*. **Agarwal** however, discloses about the system and method for distributing the path-vector routing protocol (*“path vector routing algorithm”*) such as router-distributed Border Gateway Protocol ‘rdBGP’ (*“routing data with BGP”*) for establishing routing sessions within multiprocessor router and external protocol peers, calculating set of routes including best route, sharing or exchanging route information with external protocol peers ‘eBGP’, and updating route information from other instances of received rdBGP information (*“generating update message”*) to establish redundant communication sessions with external protocol peers and providing fault tolerance (For example see Figs. 3-5; Abstract; col. 1, lines 30-56; col. 2, lines 46-65). **Agarwal** further discloses about the rdBGP update and procedure for explicit route withdrawal based on route path attributes (*“For example see col. 7, lines 1-10)*, and thus, the use of **Cain**’s routing protocol message into the distributing the path-vector routing protocol such as router-distributed

Border Gateway Protocol 'rdBGP' as taught by **Agarwal** provide fault tolerance by establishing redundant communication sessions with external protocol peers as disclosed in **Agarwal**: col. 3, lines 45-48. Therefore, Examiner concludes that the combination of **Cain** and **Agarwal** teaches the arguable features, as disclosed here and in parts 3 and 5 above of this Office action.

- In regard to claims 16-17, Applicant asserts that the combination of **Cain**, **Agarwal** and **Hardjono** does not disclose about the “*authenticating link failure information*”. Examiner respectfully disagrees. The combination of **Agarwal** and **Cain**'s system discloses about the method and system for expediting reconvergence in the communication network (**Cain**) and for distributing the path-vector routing protocol in establishing routing sessions within multiprocessor router and external protocol peers (**Agarwal**), but lacks about “*authenticating link failure information*”. **Hardjono** however, discloses about the detecting and locating the misbehaving device in the network domain, through the use of the two-level authentication scheme to allow the receiving device to authenticate the originating sector for the packet and to secure the trusted authority between sectors, e.g. verifying and authenticating information originated from neighboring router; For example see Figs. 1, 7-10; col. 1, lines 48-63; col. 5, lines 40-60; col. 5, line 61 through col. 6, line 18), and thus, the use of verifying and authenticating information originated from neighboring router or “*authenticating link failure information*” provides secure and trusted authority between sectors, in which the misbehaving communication device is operated as disclosed in **Hardjono**: col. 2, lines 1-3. Therefore, Examiner concludes that the combination of **Cain** and **Agarwal** teaches the arguable features, as disclosed here and in part 6 above of this Office action.

- Regarding claim 42, Applicant asserts that the combination of **Cain** and **Agarwal** does not disclose about “forwarding a message containing link failure information only when the link failure information has not been previously received. Examiner respectfully disagrees. **Cain** does disclose wherein, if the link status information is not related to the previous communication link failure as disclosed in steps 206 and 208 in Fig. 2; the node provides the link status information to other nodes as disclosed in col. 4, lines 64-67; in order to reduce the number of times for computing new routes as disclosed in col. 2, lines 16-19. Therefore, Examiner concludes that the combination of **Cain** and **Agarwal** teaches the arguable features, as disclosed here and in part 5 above of this Office action.

***Allowable Subject Matter***

8. Claims 6, 13-14, and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

9. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 2661

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tri H. Phan, whose telephone number is (571) 272-3074. The examiner can normally be reached on M-F (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on (571) 272-3126.

**Any response to this action should be mailed to:**

**Commissioner of Patents and Trademarks**

Washington, D.C. 20231

**or faxed to:**

**(571) 273-8300**

Hand-delivered responses should be brought to Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

Art Unit: 2661

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tri H. Phan  
November 17, 2005



**BRIAN NGUYEN**  
**PRIMARY EXAMINER**